

### ABSTRACT

A Z-axis assembly for an optical inspection apparatus, comprises a base; first and second parallel rails secured to the base; a plurality of carriages supported by ball bearings for  
5 translatory movement parallel to the Z-axis on each of the first and second rails; the carriages having a line of travel through the ball bearings in contact with their respective rails; a support structure secured to the carriages; and a lens assembly secured to the support structure such to be movable parallel to  
10 the Z-axis, the lens assembly including an optical axis parallel to the Z-axis and the lines of travel, and optical axis and the lines of travel lie on a common plane.